



# **U.S. EPA's Clean Energy Team - Combined Heat and Power (CHP) Partnership**

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# Overview

- Background of EPA's CHP work
- EPA's CHP Partnership
- Questions

# Value CHP Adds to Industry

- Maximize useful energy output per unit fuel while minimizing cost and net pollution
  - High efficiency
  - May use byproduct fuels
  - Avoids transmission and distribution



# Clean DER -- the Next Step in Pollution Prevention

**Pollution Rate  
(supply side)**

***Clean DER*  
reduce this**

**X**

**Amount of kWh  
(demand side)**



**reduces this**

**=**

**GHG Emissions**

# The CHP Partnership

- Summary
  - EPA's Combined Heat & Power Partnership is a **voluntary partnership** between EPA, the CHP industry, utilities, and state and local governments designed to foster cost-effective, environmentally beneficial CHP projects
- Vision
  - Achieve implementation of CHP as a cost-effective energy and environmental strategy for industrial companies and others

# CHP Partnership - Regulatory Update

- Participation in output based DER efforts
  - Regulatory Assistance Project ([www.raonline.org](http://www.raonline.org))
  - “output-based regulations”: best practices for regulators: white paper with nuts and bolts - what, why and how outreach and support to air regulators
- Draft output based Best Available Control Technology (BACT)
- Draft guidance source determination for CHP
  - Clarifies treatment of third-party CHP facilities providing energy to host
- Quantifying DER emissions impacts

# Displaced Electric Emissions - Historical data (Georgia: 1996 to 2000)

- Additional generation
  - 66% coal
  - 16% gas
  - 12% biomass
  - 10% nuclear
  - 6% oil
  - 10% decrease in hydro
- Emissions
  - 21% increase CO<sub>2</sub>
  - 17% increase NO<sub>x</sub>
  - 11% increase SO<sub>2</sub>

# Marginal Displaced Emission Factor? (Georgia: 1996 to 2000)

- CO<sub>2</sub>: 1,249 lb/MWh
- NO<sub>x</sub>: 2.3 lb/MWh
- SO<sub>2</sub>: 4.1 lb/MWh
- Efficiency: 41%

# CHP Comparisons

- 5 MW NG IC Engine CHP (66% efficient & 42 ppm NOx)
  - 18% energy savings
  - 39% NOx reduction
  - 33% CO2 reduction
- 10 MW NG turbine CHP (70% efficient & 15 ppm)
  - 19% energy savings
  - 77% NOx reduction
  - 33% CO2 reduction
- 25 MW coal steam turbine CHP (70% efficient & 0.35 lb/MMBtu)
  - 5% energy savings
  - 5% NOx increase
  - 5% CO2 increase

# More Information

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